2001 National Survey of Hospital Coagulation Laboratory Practices:

Personnel Qualifications and Clinical Service/Laboratory Capacities

S Shahangian, PhD; AK Stanković, MD, PhD;[1] IM Lubin, PhD; JH Handsfield, MPH; MD White, BS

Division of Laboratory Systems • Public Health Practice Program Office • Centers for Disease Control and Prevention

[1]Current affiliation: Becton Dickinson Clinical Laboratory Solutions, Franklin Lakes, NJ

Introduction

Hospital clinical laboratories play an important role in healthcare; and as documented in this survey, an estimated 97% of hospital laboratories reported performing coagulation tests. Coagulation tests are known to be vital to the diagnosis, treatment and management of bleeding and hypercoagulability disorders, and the majority of them are performed to screen for coagulation disorders or to monitor therapeutic anticoagulant therapy. In response to the uncertainty surrounding coagulation testing practices, we conducted this survey of hospital coagulation laboratories in the US, and chose hospitals as the testing environment to address a broader spectrum of in-house testing practices not subject to observation in physician office laboratories or other point-of-care testing sites. The purpose of this survey was to evaluate the availability of coagulation tests, assess various pre-analytical, analytical and post-analytical stages of the testing process, and evaluate some testing practices critical to clinical management of patients. This paper presents reported practices relating to coagulation personnel and clinical service/laboratory characteristics.

The survey used and a summary of our findings can be found at http://www.phppo.cdc.gov/mlp/coag2001.asp.

Methods

A group of coagulation laboratory experts and survey methodologists assisted the CDC in the development as well as the evaluation of the content and format of this 2001 survey of hospital coagulation laboratory directors (response rate, 79%). Furthermore, several versions of the survey were pilot tested in 9 hospital coagulation laboratories before its final dissemination. From a sampling frame of institutions listed in the 1999 directory of the American Hospital Association (AHA), we randomly selected 800 hospitals (sampling rate, 14%), and assessed practices in their coagulation laboratories. This sampling frame is not limited to the AHA members and it includes 95% of all hospitals as indicated by the Online Survey, Certification and Reporting database of CLIA-registered hospitals. Participants had the option of responding via Internet, and 20 (3%) did so. Inconsistent responses were excluded from data analysis.

Results

Response rate. We received returned surveys from 632 institutions, resulting in a response rate of 79%.

Performance of coagulation tests. Of the 629 responding to this question, 612 (97%) reported performing coagulation testing.

Testing Location

Respondents performed coagulation tests in the following locations:

Location	Number (%) of Hospital Laboratories
Core laboratory	334 (55%)
Hematology laboratory	231 (38%)
Coagulation laboratory	95 (16%)
Point of care	64 (11%)
Stat laboratory	31 (5%)
None of the above	10 (2%)

Number of Full Time Equivalents (FTEs)

Number of FTEs	Number (%) of Hospital Laboratories
<4	427 (71%)
4-9	101 (17%)
≥10	75 (12%)

Components of Competency Assessment Program

The respondents included the following components in their competency program for coagulation testing personnel:

Component of Competency Assessment	Number (%) of Hospital Laboratories
Successful performance of QC* with documentation of remedial actions	561 (92%)
Review of procedure manuals	525 (86%)
Analysis of unknown samples	491 (80%)
Direct observation of a task	455 (74%)
Participation in continuing education	370 (61%)
Periodic written examination	185 (30%)
None of the above	1 (0.2%)

*QC, quality control

Educational Degree of Coagulation Laboratory Director

Degree	Number (%) of Hospital Laboratories
MD	559 (91%)
PhD	43 (7%)
Other	50 (8%)

Certification of Coagulation Laboratory Director

The proportions of the laboratory directors with specific professional board/society certifications were as follows:

Certification	Number (%) of Hospital Laboratories
in clinical pathology	456 (76%)
in anatomical pathology	378 (63%)
by the American Society of Clinical Pathologists	151 (25%)
in medicine	109 (18%)
in hematopathology	48 (8%)
in hematology	32 (5%)
by the National Credentialing Agency	7 (1%)
by the American Association of Bioanalysts	4 (1%)
by the American Board of Clinical Chemistry	4 (1%)
by the National Registry of Clinical Chemistry	1 (0.2%)

Coagulation Service Capacity

Service Capacity	Number (%) of Hospital Laboratories
Clinician available for consultation with expertise in coagulation disorders	346 (57%)
Outpatient clinic specializing in adjustment of oral anticoagulants	121 (20%)
Outpatient clinic specializing in diagnosis/treatment of coagulation disorders	58 (9%)

Concluding Remarks

Limitations

Various laboratory practices noted in this survey are those that have been reported; and like any other surveys, they may not reflect actual practices. Surveys are subject to framing biases which can be reduced (e.g., by pilot testing) but not totally avoided.

Generalizability

Due to the high response (79%) and sampling (14%) rates, results of this survey appear to be generalizable.

In conclusion, reported personnel and other resources appeared to support in-house coagulation testing; but most reported not having specialized outpatient coagulation services.